Attorney Docket Number: FSP0163
Application Number: 09/995,056

APPEAL BRIEF

for

Attorney Docket Number: FSP0163
Client Reference Number: 260158US
Title: network performance monitoring
Application Number: 09/995,056
Filing Date: Monday, November 26, 2001
First Named Inventor: Cruickshank III, Robert F.
Group Art Unit: 2151

Appeal is taken from the Examiner's most recent office action mailed on 05/19/2006.

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REAL PARTY IN INTEREST

The real party in interest is

Broadband Royalty Corporation
1105 North Market St.
Suite 1300
Wilmington, DE, USA

the assignee and/or owner of all rights and interest in the subject matter of this appeal.

RELATED APPEALS AND INTERFERENCES

None.

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STATUS OF CLAIMS

Claim(s) 1-3, 5-7, 9-20, 22, 23, 33-35, 37-39, 41-52, 54, 55, and 67-85 are pending in the application.

Claims 4, 8, 21, 24-32, 36, 40, 53 and 56-66 are cancelled.

Claims 67-85 are allowed.

Claims 1-3, 5-7, 15-20, 22, 33-35, 37-39, 47-52, 54 are rejected under 35 USC 102(e) as being anticipated by Foulger et al., U.S. Patent Publication # 2003/0018769 (hereinafter Foulger).

Claims 9-14, and 41-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foulger et al. in view of Feinberg et al., U.S. Patent # 6,798,745 (hereinafter Feinberg).

Claims 23 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foulger et al. in view of Vogel al. U.S. Patent # 6,742,187 (hereinafter Vogel).

Claims 1, 12, 13, 14, 23, 33, 44, 45, 46, and 55 are the subject of this appeal.

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STATUS OF AMENDMENTS

No amendments were filed after final rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

Claims 1 and 33 recite a hierarchical display of network performance. The top display level shows aspects of network operation. The second level includes sub-aspects of the first level, and the third level includes sub-aspects of the second level.

In addition, data from the hierarchy is analyzed to provide an indication of a likely network problem, and a suggested action for addressing the problem.

Dependent claims 23 and 55 further recite that the network is a DOCSIS network including cable modems and cable modem termination systems, and that data collected for the hierarchy indicates numbers of cable-modem hours at the grades of degradation.

Claim 11 recites a similar hierarchy of network performance as claim 1.

In addition, performance metrics obtained from a broadband network and combined into metrics indicative of a higher-level of network performance.

Dependent claim 12 further recites deriving the higher-level performance metrics by weighting different metrics differently depending upon perceived relevance of an issue associated with the metric to network performance.

Claims 13 and 45 recite a similar hierarchy of network performance as claim 1.

In addition, performance metrics are derived from raw data obtained from a broadband network. The performance metrics are compared with thresholds to provide second metrics based upon the comparisons.

Dependent claims 14 and 46 further recite that the second metrics provide indicia of grades of degraded performance of portions of the network as a function of time.

Claim 44 is similar to claim 11, and in addition involves deriving the higher-level performance metrics by weighting different metrics differently depending upon perceived relevance of an issue associated with the metric to network performance.

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GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Are claims 1 and 33 anticipated by Foulger?

2. Are claims 12 and 44 unpatentable over Foulger in view of Feinberg?

3. Are claims 13 and 45 unpatentable over Foulger in view of Feinberg?

4. Are claims 14 and 46 unpatentable over Foulger in view of Feinberg?

5. Are claims 23 and 55 unpatentable over Foulger in view of Vogel?

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ARGUMENTS

Are claims 1 and 33 anticipated by Foulger?

For purposes of this Appeal, claims 1 and 33 stand or fall together.

Claims 1 and 33 recite, inter alia, analyzing the locations of network elements or metrics associated with the network elements to provide an indication of a likely network problem, and a suggested action for addressing the likely network problem. Foulger, Paragraph 97 teaches a web monitor application that captures IP addresses of visitors to a web site, and tests those addresses. Foulger, Paragraph 98 teaches a test application that performs a traceroute on caputred IP addresses and does a DNS lookup on them. This is something else entirely than analyzing the locations of network elements or metrics associated with the network elements to provide an indication of a likely network problem, and a suggested action for addressing the likely network problem.

In Foulger, no analysis performed to provide an indication of the problem; the system of Foulger merely continues to run regardless; no suggest action is made to address the problem. Data collection continues, and when the connection is restored, the appropriate amount of data is obtained (based on the timestamps of the web addresses, i.e. how long the connection was down).

The following table provides a summary of at least some of the distinctions between claims 1 and 33 and the cited references.

claims 1 and 33	Foulger, Paragraph 97
Analyze locations of network elements or metrics associated with the network elements to provide an indication of a likely network problem, and a suggested action for addressing the likely network	web monitor application that captures IP addresses of visitors to a web site; no analysis to provide an indication of the problem or a suggested action to address it

problem	
claims 1 and 33	Foulger, Paragraph 98
analyze locations of network elements or metrics associated with the network elements to provide an indication of a likely network problem, and a suggested action for addressing the likely network problem	test application that performs a traceroute on captured IP addresses and does a DNS lookup on them; no analysis to provide an indication of the problem or a suggested action to address it

Are claims 12 and 44 unpatentable over Foulger in view of Feinberg?

For purposes of this Appeal, claims 12 and 44 stand or fall together.

Claims 12 and 44 recite inter alia, weighting metrics differently depending upon perceived relevance of an issue associated with the metric to network performance. Feinberg, Column 5, lines 40-49 is merely a general statement that the number of combinations and permutations for processing or shaping the raw data which comprises the QoS events to obtain QoS parameter values is nearly unlimited. This is insufficient to anticipate the specific processing of weighting different metrics differently, when combining the metrics, dependent upon perceived relevance of an issue associated with the metric to network performance.

The only specific example provided by Feinberg teaches a QoS parameter value produced by summing un-weighted raw data, specifically the total number of lost packets in a one second period. There is no teaching of creating a combined metric by weighting the component metrics differently according to their relevance.

It is well established law that the disclosure of a broad genus does not anticipate every species of that genus. See Corning Glass Works v Sumitomo USA, 868 F.2d 1251, 1262 (Fed. Cir. 1989).

The following table provides a summary of at least some of the distinctions between claims 12 and 44 and Feinberg, Column 5, lines 40-49.

claims 12 and 44	Feinberg, Column 5, lines 40-49
combine first metrics by weighting different metrics differently dependent upon perceived relevance of an issue associated with the metric to network performance	merely an unspecific, general statement that the number of combinations and permutations for processing or shaping the raw data which comprises the QoS events to obtain QoS parameter values is nearly unlimited; an example of summing raw data (not metrics), without weights, to produce a metric

Are claims 13 and 45 unpatentable over Foulger in view of Feinberg?

For purposes of this Appeal, claims 13 and 45 stand or fall together.

Claims 13 and 45 recite, inter alia, performing comparisons of first metrics derived from the raw data with thresholds and to provide second metrics based upon the comparisons. Feinberg, Column 5, lines 40-60 teaches comparing a QoS parameter value with a threshold value, and taking no corrective action if the value is within range. Feinberg teaches comparing a parameter with a threshold value but does not teach providing second metrics based upon the comparison.

The following table provides a summary of at least some of the distinctions between claims 13 and 45 and Feinberg, Column 5, lines 40-60.

claims 13 and 45	Feinberg, Column 5, lines 40-60
comparisons of first metrics derived from the raw data with thresholds and to provide second metrics based upon the comparisons	comparing a QoS parameter value with a threshold value, and taking no corrective action if the value is within range

Are claims 14 and 46 unpatentable over Foulger in view of Feinberg?

For purposes of this Appeal, claims 14 and 46 stand or fall together.

Claims 14 and 46 recite, inter alia, the second metrics provide indicia of grades of degraded performance of portions of the network as a function of time. Feinberg, Column 5, lines 45-49 teaches producing a QoS parameter by summing values over a period of time. This is something else entirely than providing indicia of grades of degraded performance of portions of the network as a function of time. Feinberg, Column 5, lines 49-64 teaches taking no action if the parameter is out of range. This too is something else entirely than providing indicia of grades of degraded performance of portions of the network as a function of time.

The following table provides a summary of at least some of the distinctions between claims 14 and 46 and Feinberg, Column 5, lines 45-49.

claims 14 and 46	Feinberg, Column 5, lines 45-49
the second metrics provide indicia of grades of degraded performance of portions	teaches producing a QoS parameter by summing values over a period of time

of the network as a function of time	
claims 14 and 46	Feinberg, Column 5, lines 49-64
the second metrics provide indicia of grades of degraded performance of portions of the network as a function of time	teaches taking no action if the parameter is out of range

Are claims 23 and 55 unpatentable over Foulger in view of Vogel?

For purposes of this Appeal, claims 23 and 55 stand or fall together.

Claims 23 and 55 recite, inter alia, that the network is a DOCSIS network including cable modems and cable modem termination systems, and the first and second data indicate numbers of cable-modem hours at the grades of degradation. The Office Action cites Vogel, Col. 13 lines 9-24 for a teaching of the claimed aspect(s).

Vogel, Col. 13 lines 9-24 teaches that when impairments in the upstream channel from the cable modem to CMTS exist, cable modem systems provide for the ability to change the upstream channel in which a given cable modem uses to transmit.

There is nothing in Vogel about the first and second data indicating a number of cable modem hours. The following table provides a summary of at least some of the distinctions between 23, 55 and Vogel, Col. 13 lines 9-24.

Claims 23, 55	Vogel, Col. 13 lines 9-24
and the first and second data indicate numbers of cable-modem hours at the grades of degradation.	Merely teaches that cable modem systems provide for the ability to change the upstream channel in which a given cable modem uses to transmit. There is nothing

	in Vogel about the first and second data indicating a number of cable modem hours.

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CLAIMS APPENDIX

1. A computer program product comprising computer-executable instructions for causing a computer to:
obtain performance data related to performance of a broadband network; and
provide a hierarchical display of network performance, the hierarchical display including a first level with first data indicative of network operation and a second level with second data indicative of a plurality of issues comprising the first level of network performance;
wherein the second level includes multiple issues that contain a third level with third data indicative of network issues comprising at least some of the secondary level issues;
the computer program product further comprising instructions for causing the computer to analyze the more detail and to provide an indication of a likely network problem, and a suggested action for addressing the likely network problem.

2. The computer program product of claim 1 wherein the first data are indicative of overall performance of one of the network, and a selected portion of the network.

3. The computer program product of claim 2 wherein the first data are indicative of overall performance of the network and the issues at the second level include at least one of connectivity and traffic.

4. The computer program product of claim 1 further comprising instructions for causing the computer to provide more detail of issues comprising a selected level.

5. The computer program product of claim 4 wherein the more detail includes at least one of locations of network elements associated with the selected level, and metrics corresponding to the network elements and associated with at least one issue comprising the selected level.

6. The computer program product of claim 5 further comprising instructions for causing the computer to provide more detail regarding a selected portion of the more detail provided of issues comprising a selected level.

7. The computer program product of claim 5 further comprising instructions for causing the computer to sort the more detail according to at least one selected criterion.

8. (Cancelled)

9. The computer program product of claim 1 wherein the collected data are metrics of network performance derived from raw data indicative of network activity.

10. The computer program product of claim 9 further comprising instructions for causing the computer to derive the metrics from the raw data.

11. A computer program product comprising computer-executable instructions for causing a computer to:
obtain performance data related to performance of a broadband network; and
provide a hierarchical display of network performance, the hierarchical display including a first level with first data indicative of network operation and a second level with second data indicative of a plurality of issues comprising the first level of network performance; wherein the second level includes multiple issues that contain a third level with third data indicative of network issues comprising at least some of the secondary level issues, the computer program product further comprising instructions for causing a computer to obtain first metrics of performance of at least a portion of the broadband network; and combine a plurality of first metrics into a second metric of network performance indicative of a higher-level of network performance than indicated by the first metrics.

12. The computer program product of claim 11 wherein the instructions for causing the computer to combine the first metrics by weighting different metrics differently dependent upon perceived relevance of an issue associated with the metric to network performance.

13. A computer program product comprising computer-executable instructions for causing a computer to:
obtain performance data related to performance of a broadband network; and
provide a hierarchical display of network performance, the hierarchical display including a first level with first data indicative of network operation and a second level with second data indicative of a plurality of issues comprising the first level of network performance; wherein the second level includes multiple issues that contain a third level with third data indicative of network issues comprising at least some of the secondary level issues, the computer program product further comprising instructions for causing a computer to perform comparisons of first metrics derived from raw data with thresholds and to provide second metrics based upon the comparisons.

14. The computer program product of claim 13 wherein the second metrics provide indicia of grades of degraded performance of portions of the network as a function of time.

15. The computer program product of claim 1 wherein the hierarchical display is independent of an amount of network elements contributing to the indicia of network performance.

16. The computer program product of claim 15 wherein the second data are indicative of network issues perceived to affect network performance more than network issues absent from the display.

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17. The computer program product of claim 1 wherein the displayed data associated with levels provide indicia of absolute performance of portions of the network associated with the respective levels.

18. The computer program product of claim 1 wherein the displayed data associated with a level provide indicia of relative performance of portions of the network associated with the respective levels.

19. The computer program product of claim 18 wherein the displayed data associated with levels provide indicia of absolute performance of portions of the network associated with the respective levels.

20. The computer program product of claim 19 further comprising instructions for providing a display of the data associated with levels over time.

21. (Cancelled)

22. The computer program product of claim 1 wherein the first and second data provide indicia of grades of degradation of performance of at least portions of the network as a function of time.

23. The computer program product of claim 22 wherein the network is a DOCSIS network including cable modems and cable modem termination systems, and the first and second data indicate numbers of cable-modem hours at the grades of degradation.

24-32. (Cancelled)

33. A method, comprising:
obtaining performance data related to performance of a broadband network; and
providing a hierarchical display of network performance, the hierarchical display

including a first level with first data indicative of network operation and a second level with second data indicative of a plurality of issues comprising the first level of network performance, wherein
the second level includes multiple issues that contain a third level with third data indicative of network issues comprising at least some of the secondary level issues; and
providing an indication of a likely network problem, and a suggested action for addressing the likely network problem.

34. The method of claim 33, wherein the first data are indicative of overall performance of one of the network, and a selected portion of the network.

35. The method of claim 34, wherein the first data are
indicative of overall performance of the network and the issues at the second level include at least one of connectivity and traffic.

36. The method of claim 33, further comprising:
providing more detail of issues comprising a selected level.

37. The method of claim 36, wherein the more detail includes at least one of locations of network elements associated with the selected level, and metrics corresponding to the network elements and associated with at least one issue comprising the selected level.

38. The method of claim 37, further comprising:
providing more detail regarding a selected portion of the more detail provided of issues comprising a selected level.

39. The method of claim 37, further comprising:
sorting the more detail according to at least one selected criterion.

40. (Cancelled)

41. The method of claim 33, wherein the collected data are metrics of network performance derived from raw data indicative of network activity.

42. The method of claim 41, further comprising:
deriving the metrics from the raw data.

43. The method of claim 42, wherein deriving the metrics comprises:
obtaining first metrics of performance of at least a portion of the broadband network; and
combining a plurality of first metrics into a second metric of network performance indicative of a higher-level of network performance than indicated by the first metrics.

44. A method, comprising:
obtaining performance data related to performance of a broadband network; and
providing a hierarchical display of network performance, the hierarchical display including a first level with first data indicative of network operation and a second level with second data indicative of a plurality of issues comprising the first level of network performance, wherein
the second level includes multiple issues that contain a third level with third data indicative of network issues comprising at least some of the secondary level issues;
obtaining first metrics of performance of at least a portion of the broadband network; and
combining a plurality of first metrics into a second metric of network performance indicative of a higher-level of network performance than indicated by the first metrics;
wherein combining the first metrics comprises:
weighting different metrics differently depending upon perceived relevance of an issue associated with the metric to network performance.

45. A method, comprising:
obtaining performance data related to performance of a broadband network; and
providing a hierarchical display of network performance, the hierarchical display

including a first level with first data indicative of network operation and a second level with second data indicative of a plurality of issues comprising the first level of network performance, wherein
the second level includes multiple issues that contain a third level with third data indicative of network issues comprising at least some of the secondary level issues;
obtaining first metrics of performance of at least a portion of the broadband network; and
combining a plurality of first metrics into a second metric of network performance indicative of a higher-level of network performance than indicated by the first metrics;
performing comparisons of first metrics derived from raw data with thresholds; and
providing second metrics based upon the comparisons.

46. The method of claim 45, wherein the second metrics provide indicia of grades of degraded performance of portions of the network as a function of time.

47. The method of claim 33, wherein the hierarchical display is independent of an amount of network elements contributing to the indicia of network performance.

48. The method of claim 47, wherein the second data are indicative of network issues perceived to affect network performance more than network
issues absent from the display.

49. The method of claim 33, wherein the displayed data associated with levels provide indicia of absolute performance of portions of the network associated with the respective levels.

50. The method of claim 33, wherein the displayed data associated with a level provide indicia of relative performance of portions of the network associated with the respective levels.

51. The method of claim 50, wherein the displayed data associated with levels provide indicia of absolute performance of portions of the network associated with the respective levels.

52. The method of claim 51, further comprising:
displaying the data associated with levels over time.

53. (Cancelled)

54. The method of claim 33, wherein the first and second data provide indicia of grades of degradation of performance of at least portions of the network as a function of time.

55. The method of claim 54, wherein the network is a DOCSIS network including cable modems and cable modem termination systems, and the first and second data indicate numbers of cable-modem hours at the grades of degradation.

56-66. (Cancelled)

67. A computer program product comprising computer-executable instructions for causing a computer to:
obtain performance data related to performance of a broadband network; and
provide a hierarchical display of network performance, the hierarchical display including a first level with first data indicative of network operation and a second level with second data indicative of a plurality of issues comprising the first level of network performance; wherein the second level includes multiple issues that contain a third level with third data indicative of network issues comprising at least some of the secondary level issues, said instruction to provide a hierarchical display includes an instruction to obtain indicia of cumulative amounts of time that network elements of at least a desired portion of a

broadband network were considered at corresponding qualities of network performance during a designated time frame; said computer executable instructions further comprising:

instructions to display the cumulative amounts in a hierarchy of network issues, the hierarchy including a summary category including summary values indicating total cumulative amounts of time that the network elements in the at least a desired portion of the network were considered at corresponding qualities of performance, the hierarchy further comprising a plurality of sub-categories contributing to the summary category, and the subcategories each further comprising at least one sub-sub-category contributing to the sub- categories.

68. The computer program product of claim 67 wherein the summary values indicate total cumulative amounts of time that all the network elements in the at least a desired portion of the network were considered at corresponding qualities of performance.

69. The computer program product of claim 67 further comprising instructions for causing the computer to indicate that categories contributing to a higher-level category are one of direct contributors and indirect contributors to the higher-level category.

70. The computer program product of claim 67 further comprising instructions for causing the computer to display additional information regarding a selected category of cumulative amounts.

71. The computer program product of claim 70 further comprising instructions for causing the computer to display further additional information regarding selected additional information.

72. The computer program product of claim 67 further comprising instructions for causing the computer to determine network areas that are most-negatively contributing to network performance.

73. The computer program product of claim 72 further comprising instructions for causing the computer to recommend action, regarding at least one of the network areas that are most-negatively contributing to network performance, for improving network performance.

74. The computer program product of claim 72 further comprising instructions for causing the computer to implement action, regarding at least one of the network areas that are most-negatively contributing to network performance, for improving network performance.

75. The computer program product of claim 67 wherein the instructions for causing the computer to obtain indicia of cumulative amounts of time that network elements cause the computer to access a storage area containing the indicia.

76. A method, comprising:
obtaining performance data related to performance of a broadband network; and
providing a hierarchical display of network performance, the hierarchical display including a first level with first data indicative of network operation and a second level with second data indicative of a plurality of issues comprising the first level of network performance, wherein
the second level includes multiple issues that contain a third level with third data indicative of network issues comprising at least some of the secondary level issues;
said providing a hierarchical display includes obtaining indicia of cumulative amounts of time that network elements of at least a desired portion of a broadband network were considered at corresponding qualities of network performance during a designated time frame; said method further comprising:

displaying the cumulative amounts in a hierarchy of network issues, the hierarchy including a summary category including summary values indicating total cumulative amounts of time that the network elements in the at least a desired portion of the network were considered at corresponding qualities of performance, the hierarchy further comprising a plurality of sub-categories contributing to the summary category, and the sub-categories each further comprising at least one sub-sub-category contributing to the sub-categories.

77. The method of claim 76, wherein the summary values indicate total cumulative amounts of time that all the network elements in the at least a desired portion of the network were considered at corresponding qualities of performance.

78. The method of claim 76, further comprising:
indicating that categories contributing to a higher-level category are one of direct contributors and indirect contributors to the higher-level category.

79. The method of claim 76, further comprising:
displaying additional information regarding a selected category of cumulative amounts.

80. The method of claim 79, further comprising:
displaying further additional information regarding selected additional information.

81. The method of claim 76, further comprising:
determining network areas that are most-negatively contributing to network performance.

82. The method of claim 81, further comprising:
recommending action, regarding at least one of the network areas that are most-negatively contributing to network performance, for improving network performance.

83. The method of claim 81, further comprising:

implementing action, regarding at least one of the network areas that are most- negatively contributing to network performance, for improving network performance.

84. The method of claim 76, wherein said step of obtain indicia of cumulative amounts of time that network elements comprises:
accessing a storage area containing the indicia.

85. An apparatus, comprising:
means for obtaining performance data related to performance of a broadband network; and
means for providing a hierarchical display of network performance, the hierarchical display including a first level with first data indicative of network operation and a second level with second data indicative of a plurality of issues comprising the first level of network performance, wherein
the second level includes multiple issues that contain a third level with third data indicative of network issues comprising at least some of the secondary level issues;
said means for providing a hierarchical display includes means for obtaining indicia of cumulative amounts of time that network elements of at least a desired portion of a broadband network were considered at corresponding qualities of network performance during a designated time frame; said apparatus further comprising:
means for displaying the cumulative amounts in a hierarchy of network issues, the hierarchy including a summary category including summary values indicating total cumulative amounts of time that the network elements in the at least a desired portion of the network were considered at corresponding qualities of performance, the hierarchy further comprising a plurality of sub-categories contributing to the summary category, and the subcategories each further comprising at least one sub-sub-category contributing to the subcategories.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None

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